**IN THE CLAIMS**:

Please amend claims 4-5 as shown below.

1. (Original) A water electrolysis device for determination of stable isotopic composition of water and performing mass spectrometry of one of hydrogen stable isotopic composition and oxygen stable isotopic composition, the water electrolysis device comprising a proton exchange membrane which is made of fluorocarbon polymer plated non-electrolytically with one of platinum, iridium, rhodium and iridium-rhodium alloy, and a cathode and an anode made of porous titanium plated with platinum and sandwiching the proton exchange membrane between them, wherein water is electrolyzed by introducing water into the anode side and supplying a DC current between the anode and the cathode, and oxygen gas generated at the anode and hydrogen gas generated at the cathode are respectively allowed to flow into an isotope ratio mass spectrometer.

2. (Original) The water electrolysis device according to claim 1, further comprising means for feeding nitrogen gas to each of a pathway which leads the oxygen gas generated at the anode to the isotope ratio mass spectrometer and a pathway which leads the hydrogen gas generated at the cathode to the isotope ratio mass spectrometer, whereby gas and water remaining in each pathway can be purged each time the oxygen gas or hydrogen gas is flown into the isotope ratio mass spectrometer.

3. (Original) The water electrolysis device for the determination of stable isotopic composition of water according to claim 1, further comprising a double-tube dehumidifying part in each of a pathway which leads the oxygen gas generated at the anode to the isotope ratio mass spectrometer and a pathway which leads the hydrogen gas generated at the cathode to the isotope ratio mass spectrometer, the double-tube dehumidifying part having an inner tube wall formed of a proton exchange membrane which is made of fluorocarbon polymer, wherein by letting air having dried with silica gel flow between an inner tube and an outer tube, only such water vapor which prevents mass spectrometric determination is removed from the oxygen gas or hydrogen gas flown into the inner tube, and thus the gases can be dehumidified before being introduced into the isotope ratio mass spectrometer.

4. (Currently Amended) A water electrolysis method of determining a ~~for determination of~~ stable isotopic composition of water for performing mass spectrometry of one of a hydrogen stable isotopic composition and an oxygen stable isotopic composition, the method comprising: ~~characterized by;~~

~~(1)~~ electrolyzing sample water without adding any electrolyte;~~,~~

~~(2)~~ separately extracting hydrogen gas and oxygen gas to introduce them into an isotope ratio mass spectrometer;~~,~~ and

~~(3)~~ conducting stable isotopic composition analysis of a hydrogen stable isotope and ~~or~~ an oxygen stable isotope contained in the sample water.

5. (Currently Amended) A water electrolysis method of determining a ~~for determination of~~ stable isotopic composition of water, the method comprising: ~~characterized by, with regard to the oxygen isotope $^{17}O$ contained in water,~~

electrolyzing sample water without adding any electrolyte to extract oxygen gas~~,~~; and

~~thereby~~ directly analyzing an ~~the~~ oxygen isotope $^{17}O$ as a form of molecular oxygen electrolyzed from the sample water.

6. (Previously Presented) The water electrolysis method for stable isotopic composition of water according to claim 4, wherein the electrolysis is conducted by using an electrolysis cell including a proton exchange membrane which is made of fluorocarbon polymer plated non-electrolytically with one of platinum, iridium, rhodium and iridium-rhodium alloy, and a cathode and an anode made of porous titanium plated with platinum and sandwiching the proton exchange membrane between them, in which water is electrolyzed by introducing water into an anode side chamber and supplying a DC current between the anode and the cathode.

7. (Previously Presented) The water electrolysis method for stable isotopic composition of water according to claim 5, wherein the electrolysis is conducted by using an electrolysis cell including a proton exchange membrane which is made of

fluorocarbon polymer plated non-electrolytically with one of platinum, iridium, rhodium and iridium-rhodium alloy, and a cathode and an anode made of porous titanium plated with platinum and sandwiching the proton exchange membrane between them, in which water is electrolyzed by introducing water into an anode side chamber and supplying a DC current between the anode and the cathode.